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IN this paper I shall limit myself to certain points in the course and treatment of Pott's abscesses that have occurred to me. An abscess, appearing in the course of the treatment of a case of spinal caries, is one of those incidents that may be considered as a conservative act of Nature in ridding itself of the detritus of a destructive process in the bodies of the vertebræ.

The symptoms vary according to the location of the abscess. With all cases there are at first associated a rise in temperature more or less persistent, loss of flesh, and particular individual symptoms according to the anatomical structures involved—for instance, dyspnea or dysphagia in retro-pharyngeal abscesses; respiratory symptoms in cervical abscess; pulmonary symptoms in upper dorsal caries; and in lower dorsal and lumbar abscesses, symptoms are developed according to the viscera pressed upon or involved. For the early recognition of abscesses I have come to depend largely upon a continued loss of appetite, loss of flesh, and continued elevation of temperature; in fact, when a child has been effi-

ciently treated by mechanical support for the spinal caries, and for some reason is not gaining in general health, one may suspect that there is an abscess forming. In the adult, however, these symptoms are not common. Here the course of abscesses connected with spinal caries is quite different. One of the most remarkable things is the quantity of pus that may collect in a psoas abscess in an apparently healthy adult, who has but little intimation that there is spinal caries; perhaps all that has been noticed has been persistent lumbago until the patient is brought to the surgeon, who finds that the iliac fossa is filled with a resistant mass, the thigh slightly flexed and enlarged from the passage downward of the pus along the course of the psoas and iliacus muscles.

I have, in fact, come to regard spinal caries in an adult as essentially a different disease from that which occurs in a child. In adults the following group of symptoms is not at all uncommon: For a few months the patient has noticed some slight, persistent, local pain in the back, which is thought to be rheumatism. He experiences a sensation of general debility; there is slight loss of appetite, but he continues about his occupation—frequently a very laborious one, with progressive loss of flesh and persistent elevation of temperature. On physical examination no deformity in the spine can be determined, and occasionally, especially in the lumbar region, there is only slight spasm of the erector spinæ muscles; but in the iliac fossa, and down on the thigh, one may notice a large collection of pus. It is true that we may have spinal caries in a child

appear very insidiously; but in an adult it is the rule, rather than the exception.

Although the appearance of an abscess in Pott's disease may be considered simply an incident of the disease, yet it is a very serious affair unless it is properly treated, and in many of our patients, in spite of all our care, it is the beginning of the end; for when an abscess opens, and sepsis occurs, unless great care is taken a fatal ending is inevitable.

The pertinent question in regard to all abscesses connected with spinal caries is: What shall be done with them? Shall they be left alone, and if so, how long? Shall they be opened, and if so, when? Formerly, as we know, these abscesses were left alone, because the mortality attending their opening was very great, but in later years we have come to regard the opening of abscesses in Pott's disease as a proper procedure under certain circumstances—and these circumstances I shall attempt to define. The surgical axiom, that wherever pus is found it should be evacuated, is not in this instance literally true, since we are all familiar with cases of abscesses in Pott's disease, that, left to themselves, and under careful mechanical and hygienic management, have in course of time become absorbed. It is true that reasoning from an individual case is, as a rule, dangerous, but I wish to relate one case that illustrates the expectant treatment of an abscess.

In 1884, an adult, J. D., twenty-four years of age, a bank-clerk in Somerville, was seen; he had been treated for a year or more for lumbago and rheumatism, but a few weeks previously he had noticed that his right thigh was enlarged and the limb

flexed. He called the attention of his family physician to this, and I was asked to see the patient. On examination I found slight tenderness over the last dorsal and first lumbar vertebræ. The concavity of the right iliac fossa was filled with a dense, indistinctly fluctuating tumor. The right thigh, an inch below the groin, was six inches larger than the left, and was occupied by a fluctuating tumor. The patient had lost some flesh, though his appetite was excellent, but he had been progressively growing worse. His condition having been explained to him, he concluded to try an efficient mechanical support for his back, and to temporize in the treatment of the abscess. A Taylor back-brace was adjusted, and the patient was instructed how to bandage the thigh with a flannel bandage to prevent the extension of the pus.

I saw this patient at various intervals during the next two years, and at the end of that time I could not detect any perceptible enlargement of the right thigh. Four years later there remained some thickening in the right iliac fossa, but the abscess had apparently been completely absorbed. At the present time he is engaged in his occupation, strong, and apparently perfectly well.

This is a case showing what can be done by expectancy. I could cite numerous instances of conditions practically similar in children that were strong and healthy, and not of a marked tuberculous diathesis, in which absorption of the abscess had occurred.

Bearing upon expectancy is the fact that these abscesses are often of long standing—that is, five, six or seven years may have elapsed since the beginning of the carious process; and the more quiescent

the carious process, the better the result that may be expected from an operation.

Efficient mechanical support of the spine will in a great many cases unquestionably avoid the necessity for operative interference. My own feeling in regard to the matter is, that, until some failure begins in the patient's general condition, no operation should be thought of just so long as the patient is improving under efficient mechanical support to the spine, unless the abscess is extending in such a way that it is involving important parts—for instance, in the spine, the cord; in the thorax, the lung.

It seems far better to me to temporize until we feel assured that the abscess will not be cared for by absorption; and, again, when we do interfere, I believe in interfering most radically and efficiently; for the danger of interference in psoas abscesses is unquestionably from sepsis, and if we drain efficiently and thoroughly, and keep our wound free from septic contamination, we shall in the vast majority of cases have favorable results.

Aspiration of the abscess is an uncertain measure, for it rarely evacuates the abscess completely, because of plugging of the needle. It should be reserved for those few instances in which temporizing is being carried out, and relief to tension of the abscess is thought necessary.

The treatment by injection of the abscess-cavity after aspiration is uncertain, and when active germicides are used there is danger of systemic poisoning.

The ordinary psoas abscess, as it presents itself, forms a tumor in the iliac fossa and in the upper part of the thigh, and when expectancy has been

tried and is of no further avail, I carefully prepare the patient for operation by accurately fitting a Taylor brace, or by recumbency in bed for a week or ten days. This, I have found, tends to limit the size of the abscess and to render it more readily drainable. After aspiration, to exclude the possibility of aneurism or solid tumor, a free incision, just external to the femoral vessels, is made into the substance of the presenting tumor. This is usually associated with the discharge of a large quantity of pus. An incision is then made into the most prominent portion of the swelling in the iliac fossa, care being taken that the peritoneum is avoided when one reaches the transversalis fascia and the subperitoneal fat. From this point a block-tin sound is passed as far as may be up into the abscess-track toward the spine. Direct drainage is then obtained by carefully dissecting down on the outer edge of the quadratus lumborum to the distended psoas and iliacus sheath. Usually these three openings are necessary in order to efficiently deal with the tuberculous material lining the abscess-wall. A curette and flushing are used freely, and large drainage-tubes are placed in such positions that they will efficiently drain the cavity. The incision in the iliac fossa is frequently closed by suture. Occasionally the incision into the anterior upper portion of the thigh is closed by suture, but rarely have I diminished the size of the opening which is made in the loin, from the fact that from this opening I hope to obtain direct drainage of the abscess from as near its source as is practicable. Of course, the fingers are introduced into the opening through the loin, and if any loose

fragments of necrotic bone can be felt they are removed.

If the patient has a double psoas abscess I deal with both in the same manner, especially if they occur in an adult; because I have found that with double psoas abscesses it is better to drain both sides efficiently than to attempt to drain one side and then to drain the other; for, if only one side is drained, a large reservoir of pus may be left, which communicates through a small opening with the side drained, and this collection of pus is occasionally the source of systemic poisoning. If a psoas abscess is efficiently drained, the quantity of pus discharged will diminish from day to day, and, according to the size and extent of the spinal carious process, will gradually cease in a varying time.

No more depressing picture can be presented to a surgeon than to see a psoas abscess that he has opened become septic, and the patient gradually develop septicemia and die from that cause. Hence, for success in dealing with these abscesses, the most rigid antisepsis is absolutely essential.

Those unique abscesses, that for some reason do not follow the usual course, of descending in the sheath of the psoas muscle, but point posteriorly at some point on the back, are likewise dealt with by free incisions at their most prominent part, by efficient flushing, and thorough curetting.

Retro-pharyngeal abscesses, which are rare, form a group by themselves. I have seen only six, and two have been fatal. In both instances death occurred from bursting of the abscess and flooding of the lungs. Usually on introducing the finger into the

posterior wall of the pharynx one can feel an elastic swelling, which may be incised by a suitably guarded knife introduced into the median line of the posterior wall of the pharynx. The "Roser position" of the head, that is, the head dependent over the end of a table, is by all odds the best, as, with a suitable mouth-gag, it gives complete and efficient control of the mouth of the patient, and the discharge of pus that takes place. With the patient in this position and efficiently held by assistants, one does not have to make a plunge in the dark, so to speak, but can thoroughly open the mouth, and can make a free incision directly into the apex of the tumor, and the discharge of pus will take place through the mouth and nostrils, and there will be no danger of suffocation from the pus entering the respiratory tract.

In the last two cases of retro-pharyngeal abscesses that I have had to deal with I made a direct incision just posterior to the right sterno-cleido-mastoid, dissecting down deliberately until I came in contact with the sheath of the main vessels of the neck. Holding these anteriorly I then entered a director or blunt probe, carefully separating the structures until I tapped the abscess laterally. In this manner I was in one instance enabled to keep the abscess sweet from beginning to end; in the other, unfortunately, the child was moribund at the time of attempting the operative interference, and my efforts were unavailing. This is a measure seemingly worthy of attention, and has been the subject of investigation by one Russian authority.

It is true that the operation for a Pott's abscess is

a matter of consequence, but the dressing is of equal importance. I have come to use baked gauze, the inner layers of which are saturated with 1 : 2000 solution of corrosive sublimate, applied directly in contact with the various incisions that have been made. Over this is placed a large quantity of dry baked gauze; and I have found that assistants err in putting on too small a dressing. If it is a psoas abscess it is held in position by an efficient gauze spica-bandage. In all children great care should be taken to protect the dressing by putting on a mackintosh or oil-silk to prevent soiling by urine or feces. Usually, within twelve hours, this dressing must be changed; for from a cavity as large as the average psoas abscess an enormous quantity of sanious fluid drains away and saturates the dressing. When treated by this method the subsequent dressings remain sweet and clean for from a week to ten days at a time.

In abscesses that point in other regions than along the course of the psoas and iliac muscles, for instance on the back, where it is impossible to get directly to the bottom of the channel of pus, the cavity is tamponed with antiseptic gauze. In a retro-pharyngeal abscess when an incision is made directly behind the sterno-mastoid muscle, and the abscess-cavity is drained through this channel, a suitably-sized drainage-tube is placed in the wound, the remainder being held open by antiseptic gauze. This wound should be dressed once in twelve hours, owing to the liability of pus to collect in small pockets, and to prevent any possibility of pressure being

made on the important structures of the neck. This measure should be carried out for two or three days.

In the prognosis of psoas abscesses there is an important distinction to be made between abscesses occurring early and late in the disease. In those early or *acute* abscesses that come on within the first few months of a caries of the spine, and that are associated with marked constitutional disturbance, the prognosis is not so favorable as in the late or *chronic* abscesses that occur in the disease, at the end of two, three, or more years, after the beginning of the carious process.

In acute abscesses the patient frequently succumbs to the disease in spite of all our tentative or operative efforts, whereas in chronic abscesses their evacuation by efficient drainage is simply an incident in the course of the disease.

Quite a large proportion of the cases that I have operated on for abscess in Pott's disease have recovered completely, but after a long period of time. There frequently persists for weeks and months, and in certain instances for years, a sinus, out of which is discharged a slight quantity of pus or straw-colored fluid. Frequently the mistake is made of leaving off the antiseptic dressing when the wound is reduced to this sinus, but it should be continued until all discharge has ceased. The drainage-tube should be retained until practically all of the tuberculous material has been discharged, although occasionally I feel that the tube is retained too long.

From my personal experience the following conclusions are warranted :

1. That efficient mechanical support of the spine

is the prime factor in the treatment of caries of the spine associated with an abscess.

2. That under an expectant plan of treatment, the abscess will in many cases disappear.

3. That the indication for operative interference is a steady or rapid decline in the patient's general condition.

4. That the operation should consist in thorough evacuation of the abscess, and the establishment of drainage from as near the seat of the disease as is practicable.

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